a standard is many times repeated and multiplied in the production of a weight or measure even for laboratory use, such precision is absolutely necessary in the original standards. For this reason all who value precision in their researches should take care that at least their units of measurement have been directly compared with the standards.

SCHREIBER'S EUROPEAN HERPETOLOGY[*]

THIS volume, issued by the publishers of Blasius's well-known work on European Mammals, and illustrated in nearly the same fashion, with numerous excellent woodcuts, will be very welcome to naturalists, as supplying in a compendious form an account of an important section of the Vertebrates of our Continent, on which there has hitherto been no generally recognised authority. In England, it is true, we have Bell's "British Reptiles," if it is not out of print. But as regards the lower forms of terrestrial vertebrates, Dame Nature has, we know, treated the British Islands rather scurvily. The fact is, these cold-blooded animals cannot stand a continuously low temperature, and the ice-sheet which so recently enveloped us must have destroyed all traces of reptilian and amphibian life, so that we have only what has been received from the Continent subsequently to the "Great Ice Age." And this is the reason of our scanty allowance. Europe generally, as we shall see from Dr. Schreiber's pages, is much more liberally furnished with representatives of these two orders of vertebrates.

Dr. Schreiber commences his work with an account of the European Amphibians, which naturally fall under the two sections *Urodela* and *Anura*. Of the Urodeles, or Tailed Amphibians, two families are recognised, one containing only the abnormal form *Proteus*, the other the Salamanders, which are divided into seven genera, containing altogether fifteen European species. The tailless division of the order, which comprehends the frogs and their allies, is not quite so numerous, only twelve species being recognised as European, which are assigned to eight genera. The account of these animals is followed by a very interesting chapter on their distribution, accompanied by many illustrations of it in a tabular form. Genera and species of Amphibians are alike most abundant in the south. While England only has eight species belonging to three genera, Germany has fifteen belonging to eight, and France twenty-one distributed amongst nine genera.

The second and larger division of Dr. Schreiber's work treats of European reptiles, beginning with the Snakes and proceeding through the series of Saurians to the few European representatives of the order of Chelonians. As in the former section, each species is well described, and particulars are given as to its distribution and habits. The variations in form and colour, which in some of the lizards and snakes are very numerous, are likewise given, and the mean seems to have been preserved between recognising too many species on the one hand, and allowing too few on the other. Altogether, twenty-four snakes, thirty-five lizards, and five tortoises (sixty-four reptiles in all) are treated of as occurring within the limits of the Continent of Europe. A full treatise on the range and distribution of these sixty-four animals is appended to this portion of the volume, which is concluded with remarks upon the collection, preparation, and transmission of specimens of these animals. On the whole, we can cordially recommend Dr. Schreiber's work as an excellent handbook and work of reference for those who are interested in this branch of natural history.

BOTANY IN QUEENSLAND

IN his last report on the Brisbane Botanic Gardens, Mr. Walter Hill, the director, gives some interesting details on the progress of the garden, and more especially with regard to his trip to the Bellenden Kerr range, on the north-east coast of Queensland, in November last. Looking at the garden in a utilitarian point of view, rather than as a place of recreation and enjoyment—for which purposes, however, it is largely patronised—we find that the experimental department still continues to prove its utility in the introduction and distribution of plants yielding products of commercial value; frequent application is made for plants yielding fibres, medicinal products, dyes, &c.; more especially among this group of plants are applications made for indigo for the planters upon the northern rivers. Mr. Hill thinks that the growth and manufacture of indigo will probably assume the proportions of valuable and important interest in the tropical regions of the colony, whenever labour can be obtained at a sufficiently cheap rate. The experimental coffee plantation has proved very satisfactory during the past year, and the demand for sugar-cane continues, trials in its cultivation having succeeded in several previously untried localities. Amongst other economic plants distributed for experimental cultivation in Queensland may be mentioned the olive, tea, palm oil, lavender, senna, medicinal rhubarb, cocoa, clove, cinnamon, nutmeg, vanilla, ginger, &c. That trials in the acclimatisation of many of these valuable economic plants are intended in earnest will be understood from the following extract from the report. Mr. Hill says: "I would beg to call attention to the expediency of setting apart 400 acres upon both the Johnstone and the Daintree rivers, these districts offering better advantages as regards aspect and soil than the reserve at Cardwell possesses for the cultivation of the Clove (*Caryophyllus aromaticus*), the Nutmeg (*Myristica moschata*), the Vanilla (*Vanilla aromatica*), the Cocoa (*Theobroma cacao*), the Coca (*Erythroxylon coca*), the Mangosteen (*Garcinia mangostana*), the Durion (*Durio zibethinus*), the Bread Fruit (*Artocarpus incisa*), &c., which require some more degrees of heat and moisture to bring them to perfection than can be had at Cardwell. In fact, with the vast variety of climate and soil of Queensland, it must of necessity be the case that each locality has a distinct description of vegetation most suited to it."

With regard to the ascent of Bellenden Kerr, we are told that the first two miles of the course led through low ground, which, after much wet weather, must become a swamp. The vegetation consisted of *Barringtonia carya*, F. Muell., *Ptychosperma alexandriæ*, F. Muell., *Calamus australis*, Mart. (Lawyer Cane), *Bambusa arundinaceæ*, Retz., *Pandanus aquaticus*, F. Muell.; whilst on the higher portion of the ground were *Wormia alata*, R.Br., *Dysoxylon oppositifolium*, F. Muell., *Aglaia elæagnoidea*, Benth., lawyer cane, bamboo, screw pines, &c. A fine watercourse was here crossed, which was referred to as the Bellenden River. Along the banks of this river the trees consisted of the genera *Castanospermum*, *Eugenia*, *Brucea*, *Ximenia*, *Elæocarpus*, *Owenia*, &c. The soil on both sides was of a sandy nature, with a good admixture of vegetable matter. It took about three hours to reach this place, the distance of which was calculated at about three miles from the point of departure, and having risen, according to the aneroid, to an elevation of 160 ft. Having found a spur, four hours and a half were consumed in covering a distance of one mile and a half, through a complete mass of bamboos, lawyers, and screw pines, where the exploring party camped for the night on a small incline between two ridges, at an elevation of only 1,250 ft. The trees in this neighbourhood consisted of *Erioglossum edule*, Bl., *Cupania Robertsonii*, F. Muell., *Atalaya salicifolia*, Bl., *Harpullia Leichardtii*, F. Muell., *Castanospermum australe*, A. Cunn., *Mimusops parvifolia*, R.Br., *Achras pohlmanniana*, F. Muell. The thic

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[*] Herpetologia Europæa, eine Systematische Bearbeitung der Amphibien und Reptilien welche bisher in Europa aufgefunden sind. Von Dr. Egid Schreiber, Director an der Oberrealschule zu Görz. Braunschweig, F. Vieweg und Sohn, 1875. 1 vol. 8vo., 640 pp., and numerous woodcuts.

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growth of the Pandanus was not one of the least obstacles encountered in the ascent. One tree fern (*Alsophila Rebeccæ*, F. Muell.) and a climbing fern (*Gleichenia Hermanni*, R. Br.), which runs up to a height of 50 or 60 ft., were so abundant that in some places a way had to be cut through them. *Alsophila Rebeccæ* was occasionally so much entangled with other plants, such as *Smilax elliptica*, R. Br., *Flagellara indica*, Willd., &c., that to penetrate them was a work of extreme difficulty.

The top of the range is 5,300 ft. above the sea-level, and in clear weather, considering its situation, the surrounding scenery must be very fine; at the time Mr. Hill and his party visited it, however, everything below was hidden by mist. Though the main purpose of the expedition was the exploring of a certain portion of the north-east coast of Queensland with the view of ascertaining the adaptability of the soil for cultivation, the result was not without interest in a botanical point of view, namely, the discovery of new plants. Mr. Hill records two new palms, discovered at an altitude of 2,000 ft., one of which was a beautiful plant about 20 ft. high, with leaves or fronds about 20 ft. long, and a stem about 9 in. in diameter; the other grew about 12 ft. high, and its stem was about 3 in. in diameter; this appeared to be a species of *Kentia*. A fine proteaceous tree about 60 ft. high, with splendid crimson flowers, was seen at 2,500 ft., and at 500 ft. lower down a beautiful new orchid, a species of *Anæctochilus*, was discovered. Besides these, other new plants of more or less interest were seen, which in course of time will no doubt find their way to this country.

It is not so very long since Baron Mueller recorded the discovery of some colossal trees of the Eucalyptus group in the back gullies of Victoria, trees that rivalled, and even exceeded, in height the largest known Wellingtonia. Now Mr. Hill tells us of a splendid Dammara tree passed by him in his descent from the top of the range, the height of which he roughly estimated at not less than 120 ft., with a trunk 4 ft. through. *Dammara robusta*, C. Moore, is the only species at present recorded in Australia, and this is found rather abundantly in the Queensland forests, and is stated to grow to a height of 150 ft., so that in the matter of height the tree seen by Mr. Hill does not exceed any previously known, but a trunk 12 ft. in circumference is not a small tree.

We hope that Mr. Hill will be enabled to make a further exploration of this part of Queensland, and publish the account of his journey in a more detailed form.

John R. Jackson

THE TOCK-TAY, OR LARGE HOUSE LIZARD OF EASTERN BENGAL

THIS noisy but harmless animal generally finds a lodgement in the bamboo and mat houses of the district that are anywhere near the jungle. It is also fond of living in hollow trees, which give great resonance to its loud and strongly staccatoed cry of *tock-tay*. It is of a green tint, mottled over with red spots, and suckered feet like its smaller congener, the Tick-tickee, enable it to run under beams and bamboos. Its cry is, however, very different from the gentle *tick-tick* of the small lizard, being sufficient at night to awake the soundest sleeper. He begins with a loud rattle as if to call attention; this is followed by another and more imperative rattle, and when everybody may be supposed to be listening, he strikes in deliberately with *tock-tay*—a moan—*tock-tay*—another moan—*tock-tay*—a last and final moan, with which he winds up, not to be heard again for an interval.

In the way of edibles he is fond of a good crust, and the common dung-beetle frequently furnishes him with a *pièce de résistance*. That insensate insect becomes an easy prey, owing to his heedless rattle-dum-clash ways; he is the great extinguisher of lights at night in native houses, and Europeans are also familiar with his strong sustained drone, varied by intervals of silence when he has dashed against some rafter or projection, or given himself a heavy fall; but he is not to be discouraged, and is soon up and droning about as dismally as ever.

The drone, however, is sometimes suddenly quenched without the consequent thump on the floor, and when this is followed by a crunching sound overhead one may safely infer that it is Tock-tay who has been lying in wait for him and has snapped up his prey.

These lizards may easily be caught during the day by slipping a noose over their necks while they are asleep in an exposed position; and when so caught they snarl, growl, and snap at their captor in a very ferocious way. I have not heard, however, that they are venomous.

C. B.

NOTES

THE cause of Technical Education is already much indebted to Sir Joseph Whitworth, who has just added to his former judicious benefactions by proposing to found, in connection with Owens College, Manchester, King's College, London, and University College, London, a certain number of Whitworth Exhibitions, in order to fit young men having a mechanical instinct and some little experience better to become candidates for the Whitworth Scholarships. Competitors for these exhibitions must comply with certain reasonably easy conditions, and the successful competitors will be entitled to receive during the two years next following the examination, instruction in all such subjects (being part of the course of each College) as shall better prepare them for the Whitworth Scholarship Examination—viz., practical plane and solid geometry, machine drawing, mathematics, theoretical mechanics, applied mechanics, and freehand drawing. Sir Joseph Whitworth will pay each College annually for four years, as a trial of the success of his proposal, the sum of 100*l.* for or towards, at the option of each College, the academical expenses of the exhibitioners.

THE Cambridge Mathematical Tripos has been published; it contains this year eighty-six names, of whom twenty-eight are Wranglers, thirty-four are Senior Optimes, and twenty-four Junior Optimes. The Senior Wrangler is Mr. John William Lord, of Trinity College, a son of the Rev. Isaac Lord, of Walton, near Ipswich, lately a Baptist minister in Birmingham. He was educated at Cambridge House, Birmingham, then at Amersham Hall School, near Reading. In 1868 he obtained honours at the matriculation examination of the University of London. At the examination for M.A., in June 1874, he was awarded the gold medal for mathematics. In 1870 he entered Trinity College, Cambridge, when he was awarded an open scholarship for mathematics, and subsequently was elected a foundation scholar. He was declared equal in merit for the Sheepshanks Astronomical Exhibition with Mr. Lewis, of Trinity College. The Rev. E. W. Blore was his college tutor, while he received private tuition from Mr. E. J. Routh, of St. Peter's College. Mr. Lord was distinguished as an athlete, and regularly rowed in his College boat.

THE Minister of Finances of France has at last consented to pay into the hands of M. Eichens the money which he required to begin the construction of the meridian telescope presented by the banker Bishofsheim to the Paris Observatory. M. Leverrier's letter noticing the fact was gazetted. The financial rules of the French Administration are so stringent that they could not be altered for the defence of the country during the Franco-German war; consequently it is an indication of the growing spirit of the times to see they are no longer available for obstructing the path of science. The opposition of the Minister to the payment of

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